CDN067-3 Quick Start Guide

For use with RSNetworx™

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Preface

This document describes how to install and configure the CDN067-3 Modbus to DeviceNet gateway into and Allan Bradley PLC system using RSNetworx for DeviceNet.

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1 General Information

The CDN067-3 gateway allows the user to easily interface a wide variety of serial devices to any DeviceNet industrial control network.

2 Installation and Setup

This section describes how to install and connect the CDN067-3 gateway to a DeviceNet network and to a Modbus device.

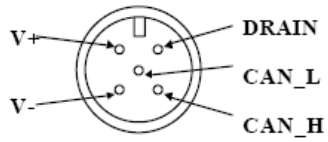
Caution **Follow all applicable electrical codes in your area when mounting and wiring any electrical device.**

2.1 Wiring

Communications connections:
The CDN067-3 requires two connections for communications – one to the DeviceNet network (male 5-pin micro connector) and one to the target Modbus device (male DB9 connector). The CDN067-3 uses the 24-volt power from the DeviceNet network.

2.1.1 DeviceNet Connector Pin out

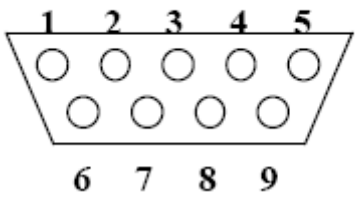
Male 5-Pin Micro Connector



PIN	SIGNAL	COLOR	DESCRIPTION
1	DRAIN	NONE	Cable shield or drain wire.
2	V+	RED	DeviceNet 24VDC(+) power.
3	V-	BLACK	DeviceNet 24VDC(-) power.
4	CAN_H	WHITE	Communication signal.
5	CAN_L	BLUE	Communication signal.

2.1.2 Serial Channel Pin outs and Connections

Male DB9 Serial Connector



CDN067-3 (RS485)

DB9 Pin	Function
1	RS485 B signal
2	RS485 A signal
3	Connect to pin 2 to insert 120 ohm terminating resistor
4-9	NC

2.2 Required Hardware

- MKS Instruments CDN067-3 Gateway.
- Allen-Bradley PLC controller with DeviceNet Scanner. This document is written based on Allen Bradley CompactLogix Controller L32E and 1769-SDN DeviceNet scanner and Power Supply.
- Rockwell Software RSNetworx DeviceNet network configuration software.
- DeviceNet Network.

2.3 Network Setup

1. *DeviceNet MAC ID:* Set MSD and LSD switches to an address (0-63) that is not currently used on the network.

2. *DeviceNet BAUD RATE:* Match DeviceNet network baud rate.

3. Use RSNetworx to configure the baud rate and MAC ID for the System.

4. Power up PLC and DeviceNet power supplies.

5. Ensure the PLC is in *Program Mode* and clear any CPU faults.

6. Verify the scanner ***MOD*** LED is solid green and ***NET*** LED is flashing green. If ***NET*** LED is flashing red, use RSNetworx to remove all DeviceNet nodes from the scanners Scanlist.

7. Verify CDN067-3 ***MOD*** LED is solid green, ***NET*** LED is flashing green. If ***NET*** LED is solid green or flashing red, use RSNetworx to remove all DeviceNet nodes from the Scanlist, then cycle CDN067-3 power.

3 Configure CDN067-3

3.1 Register the EDS with RSNetworx

1. Once RSNetworx™ is online and the CDN067-3 appears with a question mark icon, double click on the CDN067-3 icon to launch the EDS wizard

Note

Devices are unrecognized until the EDS file for the device is registered with RSNetworx™.

2. Select *Register an EDS file(s)* option and click *Next*.
3. Select *Register a single file* option. *Browse* for the CDN067-3 EDS file. Click *Next* when the file path is in the *Named:* field.

Note

The latest EDS and icon files can be downloaded from www.mksinst.com

4. The next screen shows the RSNetworx installation results. Click *Next* to continue.

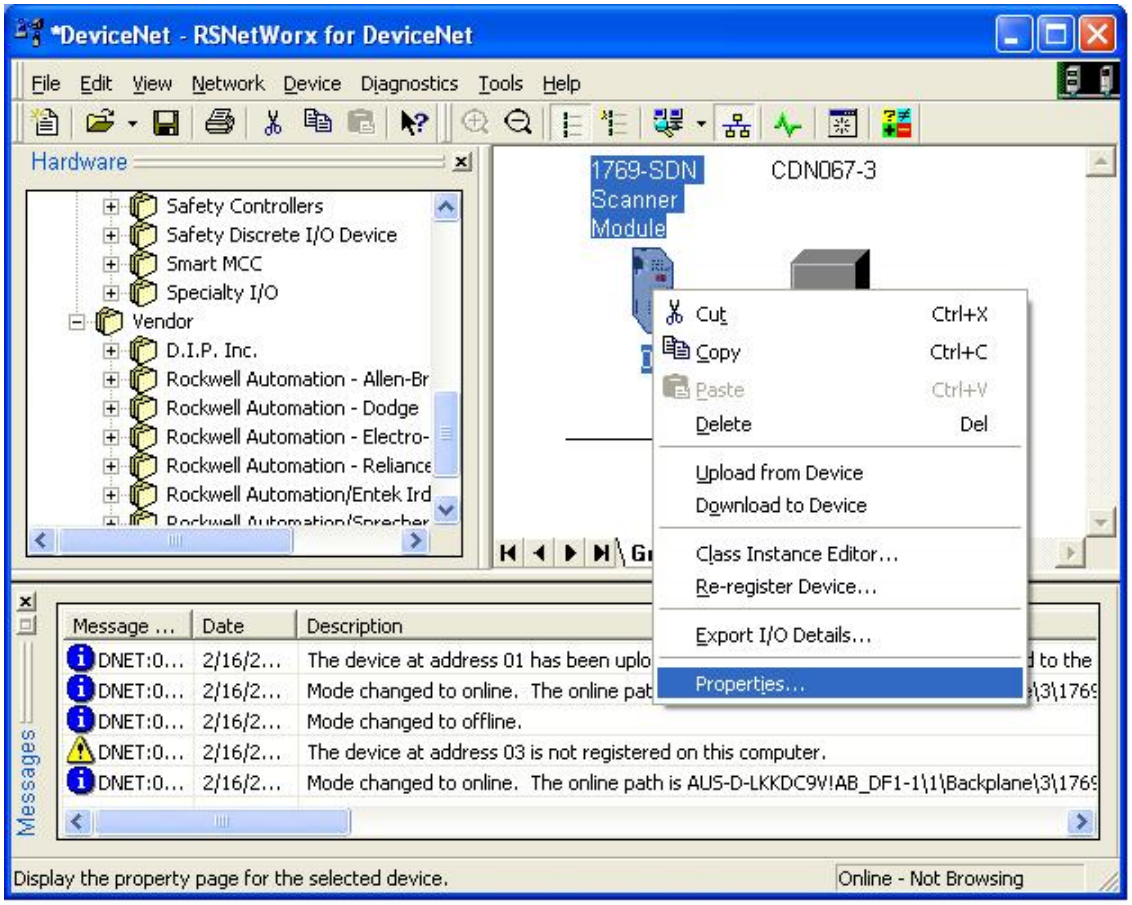
Rockwell Software's EDS Wizard
EDS File Installation Test Results
This test evaluates each EDS file for errors in the EDS file. This test does not guarantee EDS file validity.
Installation Test Results
c:\my documents\downloads\cdn066r9.eds
View file...
< Back
Next >
Cancel

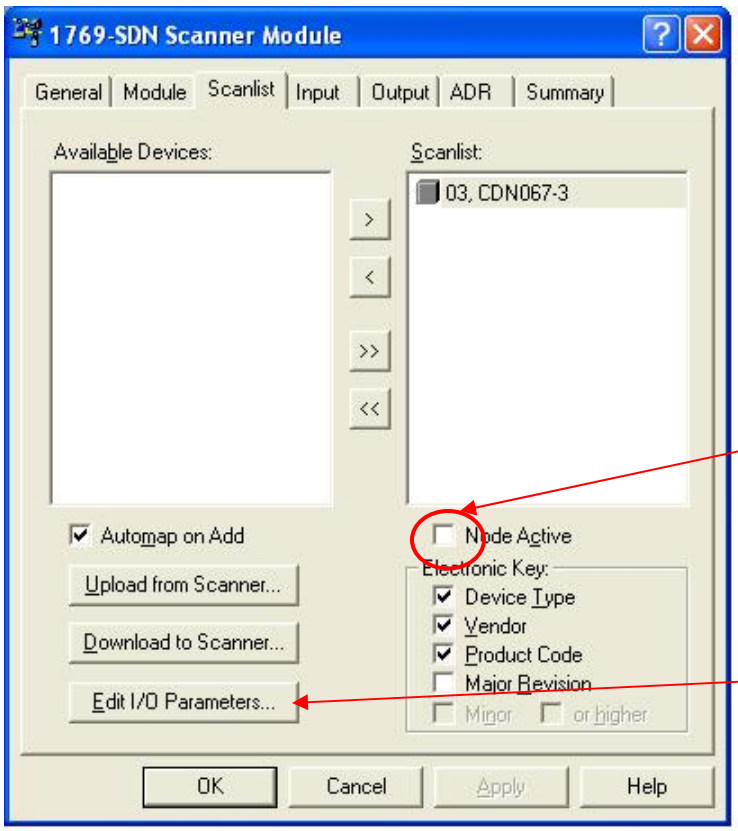
10. To finish the registration of the EDS file, click *Next* and then *Finish* at the next two screens. Once the EDS wizard closes click the *Online* operation from the *Network* menu. View the DeviceNet network and ensure the CDN067-3 is labeled CDN067-3 and not Unregistered Device. Click *Cancel* when finished.

3.2 CDN067-3 Gateway configuration

The below example uses the modbus network that contains two Watlow MicroDin units addresses 1 and 2. The example will configure the gateway to set the SetPoint value **Register 300** (0x12C) using the Poll Request and to monitor the **Input Actual Register 100** (0x064) and the **Input Error Register 101** (0x65) in the Poll Response (please refer to page 12 of the CDN067-3 user manual revision 1.3, available on the Web, for the same example.)

1. Remove the CDN067-3 from the scanlist before doing any configuration by Right-click on the DeviceNet Scanner Module->Properties->Scanlist->Uncheck "***Node Active***" box.

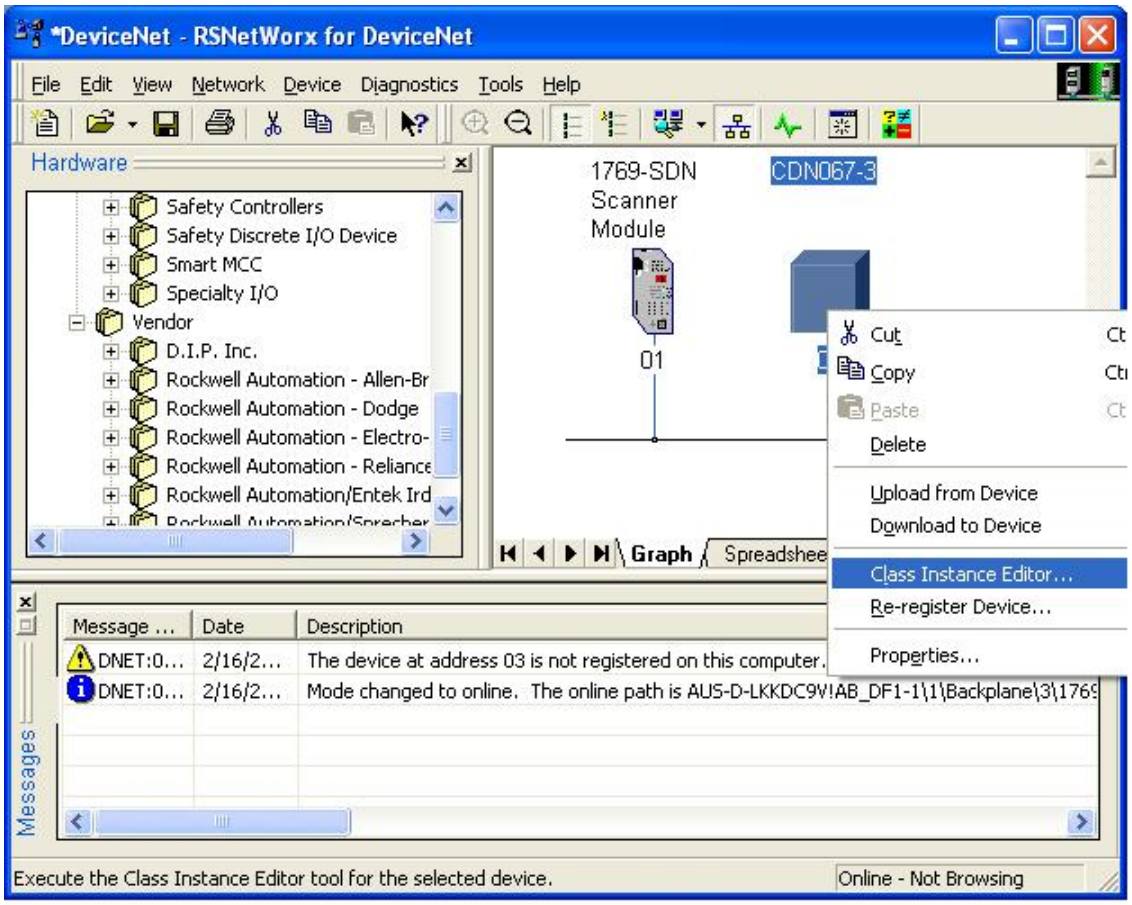

*DeviceNet - RSNetWorx for DeviceNet
File Edit View Network Device Diagnostics Tools Help
Hardware
Safety Controllers
Safety Discrete I/O Device
Smart MCC
Specialty I/O
Vendor
D.I.P. Inc.
Rockwell Automation - Allen-Br
Rockwell Automation - Dodge
Rockwell Automation - Electro-
Rockwell Automation - Reliance
Rockwell Automation/Entek Ird
1769-SDN Scanner Module
CDN067-3
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Delete Del
Upload from Device
Download to Device
Class Instance Editor...
Re-register Device...
Export I/O Details...
Properties...
Message ... Date Description
DNET:0... 2/16/2... The device at address 01 has been uplo
DNET:0... 2/16/2... Mode changed to online. The online pat
DNET:0... 2/16/2... Mode changed to offline.
DNET:0... 2/16/2... The device at address 03 is not registered on this computer.
DNET:0... 2/16/2... Mode changed to online. The online path is AUS-D-LKKDC9V!AB_DF1-1\1\Backplane\3\1769
Messages
Display the property page for the selected device.
Online - Not Browsing



Make sure CDN067-3 is not in the scanlist before configuration.

This button is for configure Poll Request, and Poll Response data size in Step 7 below

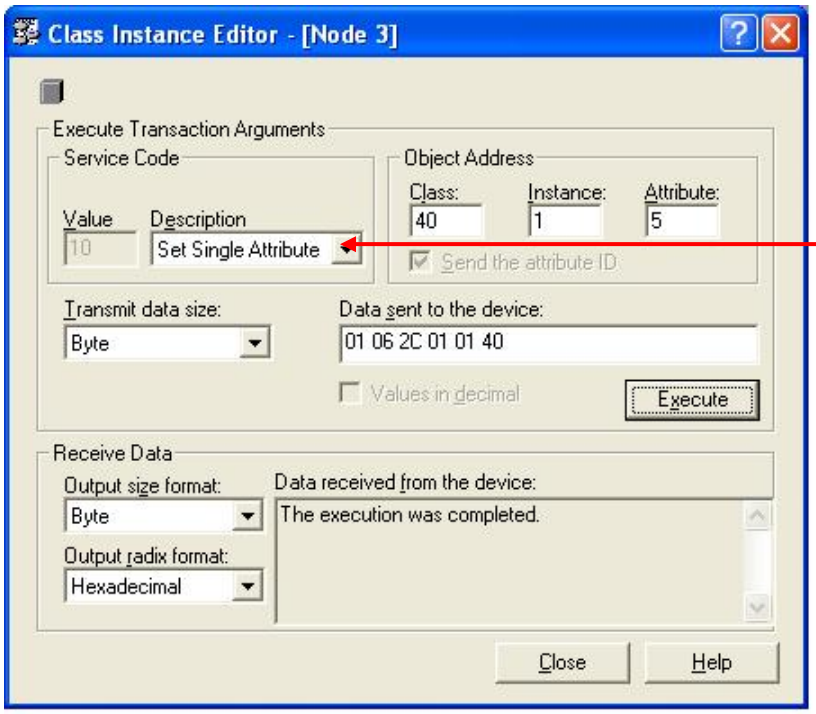
2. Right-click on CDN067-3 device->Class Instances Editor. Some warning windows popup will appear. Click "***Yes***" to continue.



3. The MBMAP1-32 is 6 bytes. The data format is provided below (and also on page 4 of the manual). The below example configure MBMAP1 (Class 0x40, Instance1, Attribute 5) for writing (modbus command 0x06) to modbus address 1, register 0x12C, NumR is always 1, CTRL =0x40 (write bit set)

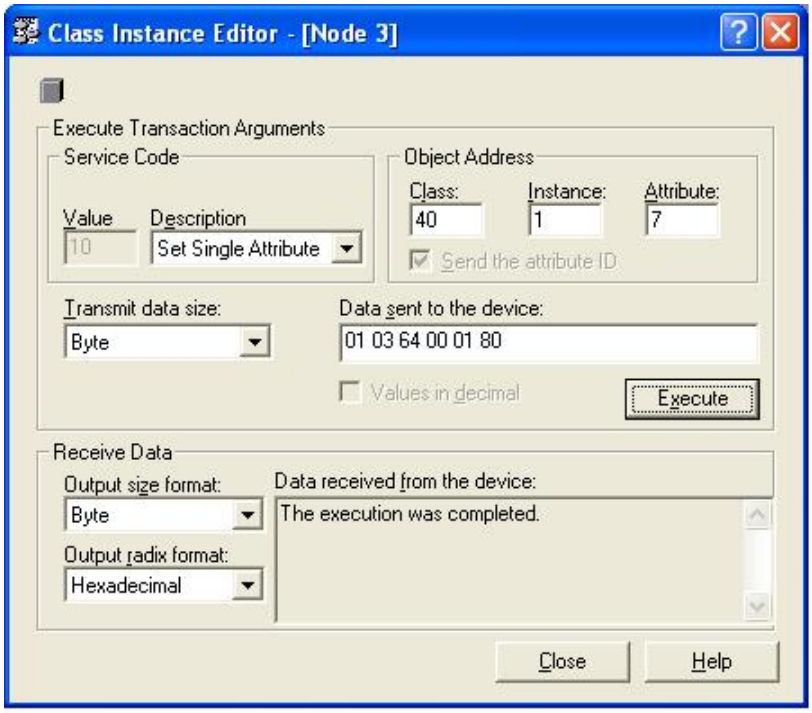
Modbus Address	Command	RegL	RegH	Number of Bytes	Control Byte

**Note: All values have to be in HEX

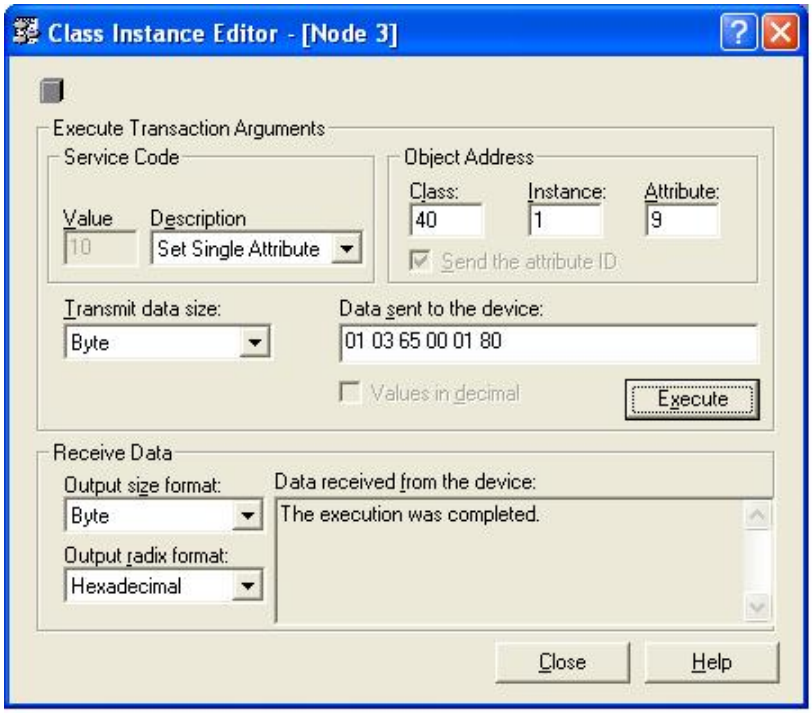


Select Get/Set Single Attribute here

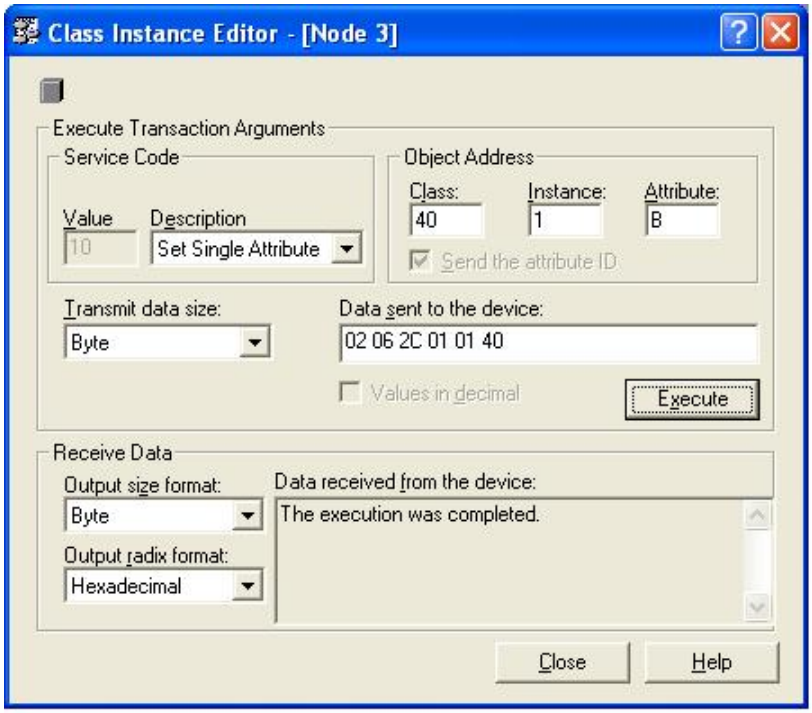
4. The below configures MBMAP2 (Class 0x40, Instance1, Attribute 7) for reading (modbus command 0x03) to modbus address 1, register 0x064, NumR is always 1, CTRL =0x80 (read bit set).



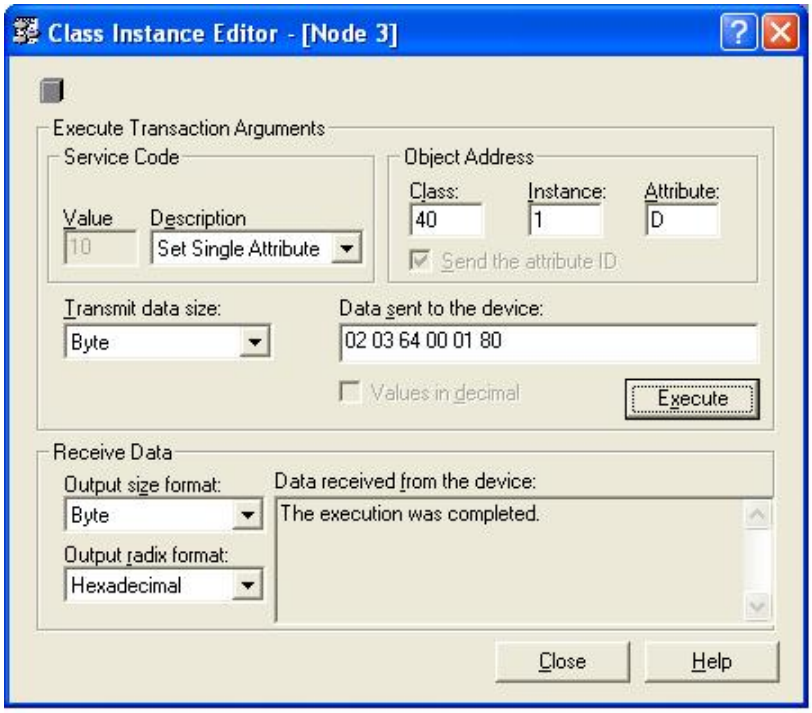
5. The below configures MBMAP3 (Class 0x40, Instance1, Attribute 9) for reading (modbus command 0x03) to modbus address 1, register 0x065, NumR is always 1, CTRL =0x80 (read bit set).



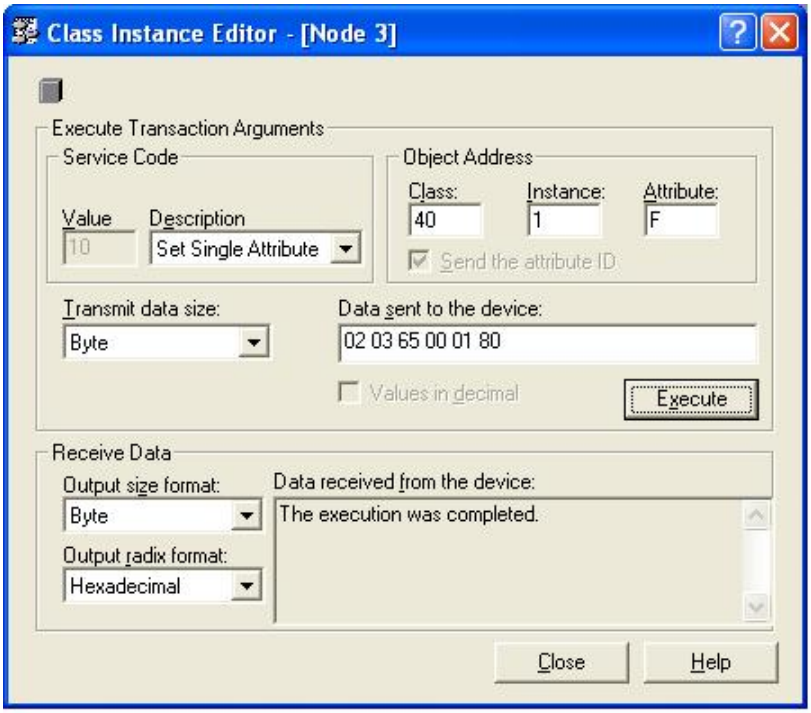
6. The below configures MBMAP4 (Class 0x40, Instance1, Attribute B) for writing (modbus command 0x06) to modbus **address 2**, register 0x12C, NumR is always 1, CTRL =0x40 (write bit set).



7. The below configures MBMAP5 (Class 0x40, Instance1, Attribute D) for reading (modbus command 0x03) to modbus **address 2**, register 0x064, NumR is always 1, CTRL =0x80 (read bit set).

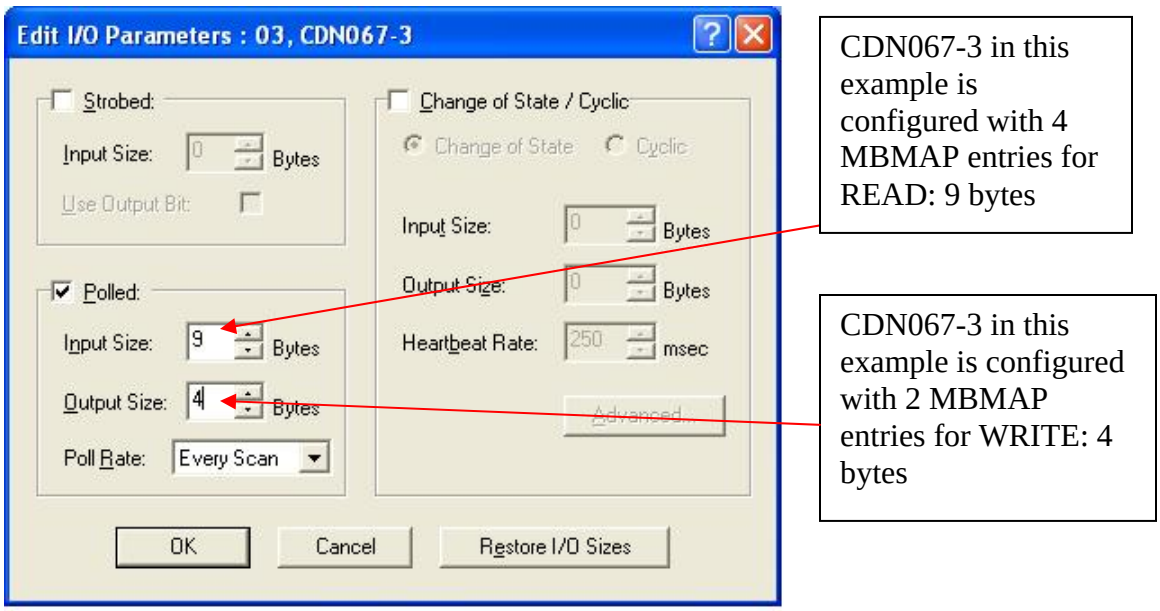


8. The below configures MBMAP6 (Class 0x40, Instance1, Attribute F) for reading (modbus command 0x03) to modbus **address 2**, register 0x065, NumR is always 1, CTRL =0x80 (read bit set).



9. On the DeviceNet Scanner Module, Right-click->Properties->Scanlist->Edit IO Parameters (refer to second figure in step 1). Since the device was configure with **MBMAP1** and **MBMAP4** for Write (**n = 2**) and **MBMAP2**, **MBMAP3**, **MBMAP5**, and **MBMAP6** for READ (**m = 4**). IO size will be calculated as follow:

    - Input Size = Number of data bytes the CDN067-3 sends back to the scanner in a Poll Response = 1 + (m x 2) = 9 bytes (m = # MBMAP configured for READ: **MBMAP2, MBMAP3, MBMAP5, MBMAP6**)
    - Output Size = Data the Application has to send to the CDN067-3 for write in a Poll Command/Request message = (2 x n) = 4 bytes (n = # MBMAP configured for WRITE: **MBMAP1 and MBMAP4**)


Edit I/O Parameters : 03, CDN067-3
Strobed:
Input Size: 0 Bytes
Use Output Bit:
Polled:
Input Size: 9 Bytes
Output Size: 4 Bytes
Poll Rate: Every Scan
Change of State / Cyclic
Change of State
Cyclic
Input Size: 0 Bytes
Output Size: 0 Bytes
Heartbeat Rate: 250 msec
Advanced...
OK
Cancel
Restore I/O Sizes
CDN067-3 in this example is configured with 4 MBMAP entries for READ: 9 bytes
CDN067-3 in this example is configured with 2 MBMAP entries for WRITE: 4 bytes

10. Click “OK” to accept, and Select the *Automap* if you want RSNetworx to automatically map the CDN067-3 input and output bytes to the scanners memory (Please refer to RSNetworx and appropriate Allen Bradley Controller/DeviceNet scanner documents if you want to manually map IO)
11. Put the CDN067-3 back on the Scanlist by checking the “Node Active” box (refer to second figure in step 2).
12. PLC is now ready for application to read or send data to modbus.